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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/660,813

09/12/2003

Hemant P. Mungekar

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7055

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7590

09/30/2009

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

09/30/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Supplemental  
Notice of Allowability**

**Application No.**

10/660,813

**Examiner**

Rodney G. McDonald

**Applicant(s)**

MUNGEKAR ET AL.

**Art Unit**

1795

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 5-20-09.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☒ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

/Rodney G. McDonald/  
Primary Examiner, Art Unit 1795

## **EXAMINER'S COMMENT**

### ***Oath/Declaration***

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:  
It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either an application data sheet or supplemental oath or declaration.

The following is an examiner's statement of reasons for allowance:

Claims 1-19 are allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including depositing a first portion of the silicate glass film over the substrate from a first gaseous mixture flowed into the processing chamber by chemical-vapor deposition; thereafter, etching the first portion by flowing an etchant gas comprising a halogen precursor, a hydrogen precursor, and an oxygen precursor into the process chamber, with halogen precursor being flowed into the processing chamber at a flow rate between 10 and 1000 sccm and the hydrogen precursor being flowed into the processing chamber at a flow rate between 50 sccm and 500 seem to control chemical interaction between the halogen precursor and the hydrogen precursor to provide a desired etch rate; and thereafter, depositing a second portion of the silicate glass film over the substrate from a second gaseous mixture flowed into the processing chamber by chemical-vapor deposition.

Claims 20-25 are allowable over the prior art of record because the prior art of record does not teach depositing a first portion of the silicate glass film over the

Art Unit: 1795

substrate by forming a plasma from a first gaseous mixture flowed into the processing chamber, the first gaseous mixture comprising a silicon-containing gas and an oxygen-containing gas; thereafter, etching the first portion by forming a plasma from an etchant gas mixture flowed into the processing chamber, the etchant gas mixture comprising a fluorine-containing gas,  $H_2$ , and  $O_2$ , wherein the fluorine-containing gas is flowed into the processing chamber at a flow rate between 10 and 1000 sccm and the  $H_2$  is flowed into the processing chamber at a flow rate between 50 sccm and 500 sccm; and thereafter, depositing a second portion of the silicate glass film over the substrate by forming a plasma from a second gaseous mixture flowed into the processing chamber, the second gaseous mixture comprising the silicon-containing gas and the oxygen-containing gas.

Claims 26-28 are allowable over the prior art of record because the prior art of record does not teach depositing a first portion of the silicate glass film over the substrate by forming a plasma from a first gaseous mixture flowed into the processing chamber; thereafter, etching the first portion by forming a plasma from an etchant gas mixture flowed into the processing chamber, the etchant gas mixture comprising a first precursor gas reactive with the silicate glass film, a second precursor gas reactive with the first precursor gas, and an inert sputtering agent flowed into the processing chamber, with the first precursor gas being flowed into the processing chamber at a flow rate between 10 and 1000 sccm and second precursor gas being flowed at a flow rate between 50 sccm and 500 seem to control chemical interaction between the first and second precursor gases to provide a desired etch rate, and with the inert sputtering

Art Unit: 1795

agent flowed at a respective flow rate to control relative isotropic and anisotropic contributions to the etching; and thereafter, depositing a second portion of the silicate glass film by forming a plasma from a second gaseous mixture.

The closest prior art of record to Papasouliotis et al. (U.S. Pat. 6,846,745) fail to teach flowing a halogen precursor at a flow rate of 10 to 1000 sccm and the hydrogen precursor being flowed at a flow rate of between 100 to 500 sccm to control chemical interaction between the halogen precursor and the hydrogen precursor to provide a desired etch rate. While Papasouliotis et al. teach  $\text{SiH}_2\text{F}_2$  as a potential precursor Papasouliotis et al. fail to teach separate flows of the halogen and hydrogen precursor and the specific flow rates thereof. Furthermore while Bayman et al. (U.S. Pat. 6,596,654) of record suggest the use of hydrogen during a deposition process does not teach the use of hydrogen during an etching process as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/  
Primary Examiner, Art Unit 1795

Rodney G. McDonald  
Primary Examiner  
Art Unit 1795

RM  
September 28, 2009